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A NEW PLOWRIGHTIA FROM GUATEMALA.[*]

W. A. KELLERMAN.

A conspicuous disease of the American Century plant, *Agave americana,* was noticed in Guatemala, C. A., the past two winters. The fungus attacks the living leaves at one or a few points, the infection then proceeding rapidly until the entire leaf may be involved. The clusters of the conspicuous fruiting bodies occupy suborbicular or oval spots which are very striking on account of their size and red or yellowish-red color, later turning brown and finally black.

Microscopic examiatnion reveals the presence of a conidial layer on the outer surface of the stromata, shown in Fig. 3, Plate 90. The conidial cells as well as the hyphae of the outer portion of each stroma, are a bright brownish or yellowish color, under the microscope nearly hyaline.

The stromata are arranged in concentric rows as shown in Fig. 1, the central ones rupturing the epidermis first, later others appearing, but the outermost incipient fruiting bodies never succeed in uplifting the epiderims, though discoloring it. New spots of infection or rather central points of rupture by the stromata may be very close to older ones, and thus there is an effused area occupied by the fruits. Often the entire leaf, most commonly the upper portion, or only spots here and there, especially toward the apex, are involved. Both sides of the leaf show the conspicuous stromata, but as a rule one side has fewer spots; sometimes it is the upper surface of the thick fleshy leaf, sometimes the lower that shows more conspicuous and abundant infection.

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[*] Contributions from the Botanical Laboratory of the Ohio State University. XXVI.

Contribution to Guatemalan Mycology. II.

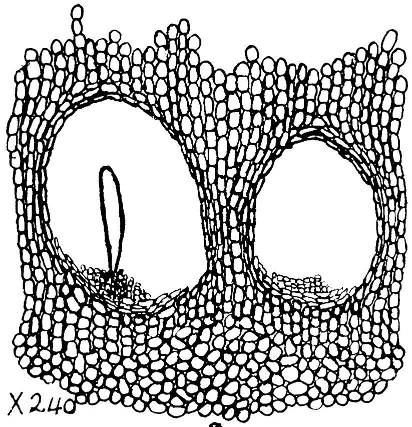
The fungus is a species of *Plowrightia* apparently undescribed. Tracy and Earle published, in the Bulletin of the Torrey Botanical Club, March 1901, p. 187, a species of this genus under the name of *Plowrightia circumscissa,* which they gave as occurring "on languishing leaves of some aloe (*Agave* sp. ?)," collected in Florida. When this was compiled by Saccardo for the Sylloge the host name "Aloe" was omitted and the entry was made as follows: "in foliis languidis Agaves spec." Some of the material from Tracy and Earle's type No. was kindly furnished me from the Missouri Botanical Garden where, Prof. Tracy informed me, his collections had been sent. After thus passing through Dr. Trelease's hands I find the host given on the label as Yucca gloriosa (Y. aloifolia). It seems certain therefore that Tracy and Earle's host is not an Agave as mine is. At any rate my Plowrightia is very different, both in microscopic characters and especially in the appearance and disposition of the stromata. Compare Fig. 1, which shows two spots of the fungus here in question, and Fig. 6, which presents a portion of a leaf affected by *Plowrightia circumscissa* Tracy & Earle. A specimen of my material sent to Prof. Tracy elicited the reply: "Very different from mine."

Another fungus somewhat similar in outward appearance to the Plowrightia, also collected in Guatemala, is shown in Fig. 7. It is *Colletotrichum agaves* Cav. No evidence was found to verify the suspicion at first entertained that the two might be forms of one and the same life cycle. Hedgecock reports (Annual Report of the Missouri Botanical Garden, 16:153-6. 1905) a study of this fungus, and he says "no ascigerous stage was found."

The technical description of the Plowrightia is given below. I have selected the specific name in honor of Mr. G. F. Williamson, of Guatemala, whose courtesies materially assisted in the botanical explorations both of 1905 and 1906. Mr. R. A. Young assisted in the study of the fungus and he and Mr. L. A. Hawkins prepared under my direction the illustrative drawings.

Plowrightia williamsoniana Kellerm. n. sp. Stromata rupturing the epidermis, prominent, globular to sub-quadrangular or oblong, ¼-¾ mm. high, ½-2 mm. long, arranged concentrically in five to ten (or more) somewhat irregular rows, the inner larger, the outermost poorly developed and scarcely lifting the epidermis, forming at first a definite suborbicular or oblong spot, but later fusing with adjacent affected areas, in many cases finally occupying nearly or quite the entire leaf.

The stromata are at first reddish yellow, becoming gradually brown, and finally black, the surface minutely papillate, the sub-



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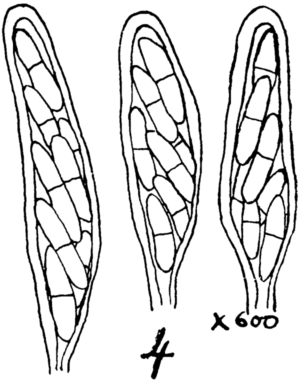

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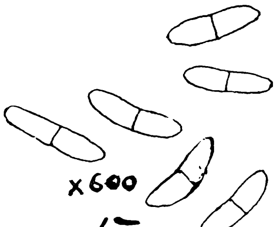

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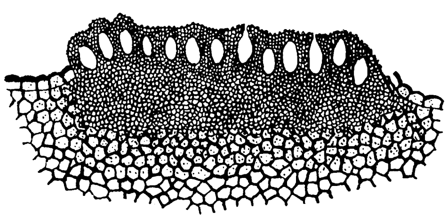

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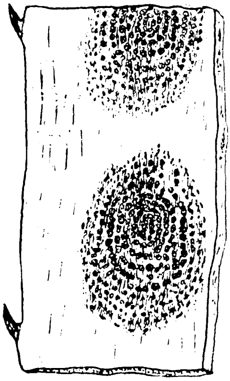

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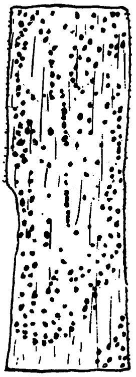

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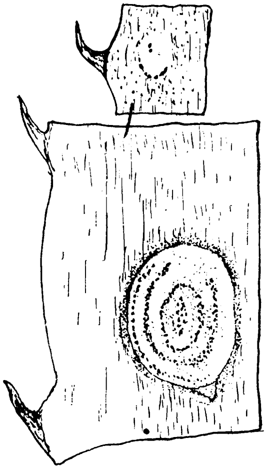

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PLOWRIGHTIA WILLIAMSONIANA Kellerm. (figs. 1-5); P. CIRCUMSCISSA Tr. & Earle (fig. 6); COLLETOTRICHUM AGAVES Cav. (fig. 7).

stance somewhat brittle but not carbonaceous. The upper portion of the pseudoparenchyma is conidiiferous, producing an abundance of oblong to subglobular reddish or hyaline cells, 7-10x3-5 μ.

The perithecial cavities are numerous (sometimes 40 or more in a stroma), 110-125x90-120 μ; asci numerous, oblong or subovate-oblong, the basal part narrowed, 60-90x12-20 μ (mostly 80-85x14-16 μ), thick-walled, containing 8 subdistichous, subequal, 2-celled, oval-oblong, yellowish or hyaline spores, 20-26x5-7 μ (mostly 22-24x5-6 μ). No paraphyses were seen.

On living and languishing leaves of Agave americana, near Guatemala city, C. A., alt. 1200-1800 m. (Circ. 4,000-6,000 ft.) W. A. Kellerman Nos. 4629, 4630, 4631, January and February 1905.

Plowrightia williamsoniana Kellerm. n. sp.—Stromatibus epidermidem rumpentibus, prominentibus, globosis, vel sub-quadrangularis vel oblongis, ¼-¾ mm. altis, ½-2 mm. longis, in 5-10 (vel pluribus) lineis sub-irregulariter concentrice dispositis, intimis majoribus, extimis haud multum evolutis, epidermidem vix levantibus, primum maculam definitam sub-orbicularem vel oblongam efformantibus, dein cum adjacentibus areis affectis confluentibus, saepe folio partim vel omnino tandem infecto. Stromatibus primum fulvis, dein fuscis, denique nigris, superficie minute papillata, substancia subfragili non carbonacea, parte superiore parenchymatis conidiifera, cellulas numerosas oblongas vel sub-globulares rubentes vel hyalinas abscindente, 7-10 x 3-5 μ. Loculis perithecialibus numerosis (plerumque 40 vel pluribus uno in stromate), 110-125 x 90-120μ; ascis numerosis, oblongis vel subovato-oblongis, parte inferiore attenuata, 60-90 x 12-20 μ (saepissime 80-85 x 14-16 μ), parietibus crassis, octosporis, sporis subdistichis, sub-aequaliter bilocularibus, ovali-oblongis, subfulvis vel hyalinis, 20-26 x 5-7 μ (plerumque 22-24 x 5-6 μ). Paraphyses non apparent.

In foliis vivis languidisque Agaves americanae, prope urbem Guatemalam, Amer. cen., alt. 1,200-1,800 m., W. A. Kellerman, 4629, 4630, 4631, in mensibus Jan. et Feb. MCMV.

EXPLANATION OF PLATE 90.—PLOWRIGHTIA WILLIAMSONIANA KELLERM. Fig. 1. An affected area of a leaf of Agave americana, showing the concentric arrangement of the stromata; fig. 2, diagram of a single stroma in vertical section; fig. 3, section of a portion of a stroma, showing two perithecial cavities and exhibiting the superficial conidiiferous layer; fig. 4, asci; fig. 5, spores; fig. 6, Plowrightia circumscissa Tr. & Earle on some Aloe; fig. 7, Colletotrichum agaves Cav. on Agave americana.